

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 10/758,118

Q79392

AMENDMENTS TO THE DRAWINGS

Please replace Figure 2 and Figure 3 with the attached, amended figures.

Attachment: Two (2) Replacement Sheets

REMARKS

With this Amendment, claims 1 and 11-24 are amended, claims 3-7, 10, and 25 are cancelled, and new claims 33-44 are added. Therefore, claims 1, 2, 8, 9, 11-24, and 26-44 are all the claims currently pending in this Application. Claims 26-32 are withdrawn. Therefore claims 1, 2, 8, 9, 11-24, and 33-44 are all the claims currently under consideration.

With this Office Action, the Examiner acknowledges Applicants' claims to foreign priority and the receipt of the certified copies of the priority documents. the Examiner also returns a signed and initialed copy of the form PTO-SB-087 submitted with the Information Disclosure Statement of June 30, 2004.

Drawings

The drawings stand objected to under 37 C.F.R. § 1.83(a) as allegedly failing to show the microlithography projection exposure machine, the illumination system, the pattern-bearing mask, the photosensitive substrate, and the semiconductor elements, as recited in the claims. The drawings also stand objected to under 37 C.F.R. § 1.84(p)(5) as allegedly failing to include reference number 47 discussed at page 16 of the specification, and for including reference number 120 which is not discussed in the specification.

With this Amendment, Applicants submit a revised Figure 2, as shown, which illustrates an illumination system ILL, a pattern-bearing mask M, a photosensitive substrate S having a substrate surface SS. Entry of this revised figure is respectfully requested. The description of Figure 2 in the specification is also amended accordingly, as shown.

Regarding the described reference number 47, Applicants amend the specification to correct this reference to the plate 27, as illustrated.

Regarding the reference number 120, Applicants amend Figure 3 to remove this reference number.

In view of the above, Applicants respectfully request that the objections to the drawings be reconsidered and withdrawn.

Claim Amendments and Cancellations and New Claims

With this Amendment, Applicants amend claims 1 and 11-19 and 21-24. Claim 1 is amended to include the limitation of claim 10 which was previously dependent from claim 1. Claims 11-19, 21, and 22 are amended for purposes of clarity and precision of language. Claim 23 is amended, as shown, to include the limitation: “wherein the projection objective is a catadioptric projection objective according to claim 15.” Thus, claim 23 depends from claim 15 instead of from claim 1. Claim 24 is amended to remove improper multiple dependency.

Claims 3-7, 10, and 25 are cancelled.

New claims 33-44 are added. Claim 33 depends from independent claim 1. Claim 34 depends from independent claim 15. Claim 35 is an independent claim drawn to a catadioptric projection objective. Claims 36-44 depend from claim 35.

Entry and allowance of these claims are respectfully requested.

Claim Objection and Rejections under §112, second paragraph

Claim 22 stands objected to under 37 C.F.R. § 1.75(c) as allegedly failing to further limit the subject matter of claim 15. The Examiner specifically asserts that lines 6-7 of claim 22

appears to obviate/remove the limitation of a $\lambda/4$ plate from being arranged between the beam splitter and the mirror.

With this Amendment, Applicants amend claim 22, as shown to recite that “there is no plane parallel $\lambda/4$ plate between the beam splitter and the concave mirror”. Therefore, Applicants respectfully request that the objection to claim 22 be reconsidered and withdrawn.

Claims 6, 22, and 25 stand rejected under 35 U.S.C. § 112, second paragraph. Regarding claims 6 and 25, Applicants note that these claims are cancelled. Regarding claim 22, in view of the amendment discussed above, Applicants respectfully request that the §112 rejection of claim 22 be reconsidered and withdrawn.

Prior Art Rejections — Burnett

Claims 1, 2, and 7 stand rejected under 35 U.S.C. § 102(a) as allegedly anticipated by Burnett (Burnett et al., “Minimizing spatial-dispersion-induced birefringence in crystals used for precision optics by using mixed crystals of materials with the opposite sign of the birefringence,” July 12, 2001, Archival Copy of the NIST, pages 1-2). Claims 6, 8-14, and 23-25 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Burnett.

Regarding these rejections, Applicants submit that Burnett fails to teach or suggest *wherein the retardation element is a lens element with a positive or negative refracting power*, as recited in amended independent claim 1. In fact, the contrary is true: Burnett discloses certain mixed crystals, where the composition can be designed such that *no retardation effect* occurs for a given wavelength of radiation. The explicit teaching is that only if those mixed crystal materials are used it is possible to fashion optical elements therefrom, which “will have intrinsic

birefringence and the consequent aberrations within an acceptable range”, i.e. very low birefringence, if at all (see last line). Therefore, the teaching of Burnett is that cubic crystals (such as crystals having a $\langle 110 \rangle$ orientation) which have a retardation effect *are not suitable* to make lenses therefrom. Therefore, Burnett does not disclose a lens acting as a retardation element, and actually *teaches away* from using $\langle 110 \rangle$ oriented crystals to form lenses therefrom.

Therefore, in view of at least the above, Applicants submit that claim 1 is patentable over Burnett and that all claims dependent therefrom (including currently-pending claims 2, 8, 9, 11-14, and 33) are patentable over Burnett at least by virtue of their dependence from claim 1. Applicants further submit that independent claims 15 and 35 and the claims dependent therefrom (including currently pending claims 16-24 and 35 dependent on claim 15 and claims 36-44 dependent on claim 35) are also patentable over Burnett based on the discussion presented above.

Applicants respectfully request that the claim rejections over Burnett be reconsidered and withdrawn.

Prior Art Rejections — Shiraishi

Claims 1, 2, 7-14 and 23-25 stand rejected under 35 U.S.C. § 102(e) as allegedly anticipated by Shiraishi (U.S. Publication 2003/0011893).

Without commenting on the substantive merits of the Examiner’s rejection, Applicants are hereby traversing the prior art rejection based on Shiraishi by perfecting their claim to foreign priority.

Applicants are perfecting their claim to priority by filing herewith a verified English translation of the priority document, Germany 101 33 842.2, dated July 18, 2001, with the U.S. Patent and Trademark Office, thereby removing Shiraishi as a reference against the present Application. Applicants note that the date of the priority document (July 18, 2001) is earlier than the U.S. utility filing date of Shiraishi (June 20, 2002) and also earlier than the U.S. provisional filing date of Shiraishi (August 1, 2001). Applicants submit that the rejected claims are fully supported by the priority document, Germany 101 33 842.2.

Therefore, in view of the above, Applicants respectfully request that the rejection over Shiraishi be reconsidered and withdrawn.

Prior Art Rejections — Sakuma

Claims 1, 2, and 7 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Sakuma (U.S. Patent 6,201,634). Claims 6, 8-14, and 23-25 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Sakuma.

Regarding these rejections, Applicants submit that Sakuma fails to teach or suggest a retardation element comprising *a body consisting of an alkaline-earth metal fluoride crystal having a <110> crystal axis*, wherein *the retardation element is a lens element with a positive or negative refracting power*, as recited in amended independent claim 1. In fact, Sakuma specifically teaches in column 13, lines 25-30, that lenses with a curvature can be obtained when the material is used with the <111> axis of the material substantially coinciding with the direction of the optical axis. Clearly, the <110> orientation is avoided precisely for the fact that there is substantial birefringence of this material in that crystal direction.

Therefore, in view of at least the above, Applicants submit that claim 1 is patentable over Sakuma and that all claims dependent therefrom (including currently-pending claims 2, 8, 9, 11-14, and 33) are patentable over Sakuma at least by virtue of their dependence from claim 1. Applicants further submit that independent claims 15 and 35 and the claims dependent therefrom (including currently pending claims 16-24 and 35 dependent on claim 15 and claims 36-44 dependent on claim 35) are also patentable over Sakuma based on the discussion presented above.

Applicants respectfully request that the rejections over Sakuma be reconsidered and withdrawn.

Provisional Obviousness-Type Double Patenting Rejections

Claims 1, 2, 7, and 1-22 stand provisionally rejected under the judicially-created doctrine of obviousness-type double patenting over claims of co-pending Application No. 11/019,202. Claim 1 stands provisionally rejected under the judicially-created doctrine of obviousness-type double patenting over claims of co-pending Application No. 11/182,599.

Without commenting on the substantive merits of the Examiner's provisional rejections, but instead to expedite prosecution of the present Application, Applicants are submitting herewith a terminal disclaimer to obviate the above-noted obviousness-type double patenting rejections over the '202 and '599 Applications.

As noted in *Quad Environmental Technologies*, the filing of a terminal disclaimer simply serves the statutory function of removing the rejection of double patenting and raises neither

presumption nor estoppel on the merits of the rejection. It is improper to convert this simple expedient of "obviation" into an admission or acquiescence or estoppel on the merits.¹

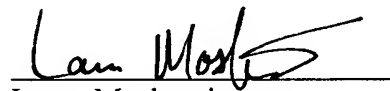
In view of the above, Applicants respectfully request that the provisional obviousness-type double patenting rejections be reconsidered and withdrawn.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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CUSTOMER NUMBER

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¹ *Quad Environmental Technologies Corp. v. Union Sanitary District*, 946 F.2d 870, 20 USPQ.2d 1392, 1394, 1395 (Fed. Cir. 1991).